

Developing Curriculum Models for Sustainable Education in Developing Nations

Xiaofeng Wang ^a

^a *Department of Physics, Florida State University, USA. E-mail: xwang3@nucmar.physics.fsu.edu*

Abstract

Sustainability education plays a pivotal role in overcoming developmental challenges in developing countries, as their education systems are usually subjected to socio-economic restrictions. This paper aims to investigate the application of sustainability in educational curricula within developing countries in terms of environmental, social and economic aspects. The current research will review sustainable education curricula and provide an analysis of the major obstacles associated with sustainability in terms of the use of old-fashioned methods of teaching, the shortage of materials and improper preparation of teachers. The paper will offer new educational models aimed at ensuring that students acquire the necessary knowledge to address various issues related to sustainability. As a result of the analysis performed, it was discovered that while educators recognised the importance of sustainability, current curricula failed to promote environmentalism and social responsibility. The article emphasizes that the incorporation of sustainability in educational institutions must be approached from the perspective of providing a solution based on the peculiarities of developing countries. The recommendations made by the authors include training of teachers, adaptation of curricula, and ensuring the availability of resources. According to the conclusions made by the authors, the inclusion of sustainability within the education system in developing countries will not only help solve local problems but will also contribute to the development of sustainability on a global scale.

Keywords: Sustainable Education, Curriculum Models, Developing Nations, Teacher Training, Sustainability Integration, Educational Reform, Policy Recommendations.

Introduction

Sustainable education is one of the essential elements to achieve sustainable development in developing countries, where the education systems are underfinanced, and they are constrained by socio-economic factors. With the increased focus on sustainability across the globe, it is necessary that the education system of such countries prepare the young generations to face challenges regarding the environment, economy, and society. Sustainable education in developing countries includes education regarding environmental issues as well as education to promote socio-economic and cultural sustainability (Wahyudin, 2018; Cebrián et al., 2020). With the increased need for sustainability across the globe, it becomes imperative that the educational systems of such countries incorporate sustainable education in their curriculum.

Even though the value of sustainability has been realized, there is a problem associated with integrating sustainable education into education systems in many developing countries. Some of these problems include the scarcity of resources, outdated educational curricula, insufficient expertise among teachers, socio-political barriers, and cultural diversity, which make it hard to adopt a standardized practice for all regions. It is from the aforementioned barriers that the failure to incorporate sustainable approaches into education arises, resulting in an insufficient knowledge base regarding sustainability principles in these countries.

This research paper attempts to look at how sustainable models in curriculums are used in developed countries and how successful they are in creating sustainability among the institutions. In addition, alternative models of curriculum that may work better for promoting sustainability in education will also be developed. More specifically, the study intends to:

1. Investigate the present curriculum models used for sustainability purposes in developing countries.
2. Determine the obstacles to achieving sustainability within educational institutions.
3. Give some practical suggestions regarding curriculum models for sustainability in education.
4. Leverage existing models for creating sustainable curricula in the context of developing countries.

The significance of this study lies in its ability to offer important information on how sustainable education can be implemented within current educational structures in developing countries. By analysing the difficulties and advantages that exist when reforming curricula, it will become easier for those involved in the process to make the best decision possible that would ensure the effectiveness of the curriculum. It will be one of the primary goals of the study to contribute towards the creation of policies that will result in improved education, which will help individuals prepare themselves to solve the most pressing issues facing our planet.

For this research, the scope will involve models related to sustainable curriculum in developing nations, especially in the areas where there are underdeveloped or challenged educational systems. The research will not touch on any particular subject or grade, but rather the curricula themselves. The main area that the models will come from will be those in Africa, Asia, and Latin American countries, which have the problem of sustainability in education. Limitations: Some of the main limitations of this research are the difficulties that might arise when acquiring sufficient information on the success rate of curricula in certain regions. There could also be difficulties in comparing the curricula from various countries because of differences in the culture and socioeconomic environment. Another limitation will be resource limitations to facilitate field work and the acquisition of data.

The Organisation of the paper follows: In Section I, the definition of sustainable education and the importance of this phenomenon to developing nations will be explained. The difficulties and problems related to the introduction of sustainability to curricula will also be described. Section II reviews the available literature about different models for the curricula of sustainable education, their advantages and disadvantages, as well as the possible obstacles that prevent implementing sustainability within curricula. In Section III, the methodology of this research will be explained, outlining the methods of collecting and analysing data. Section IV describes the results obtained during the research and gives an interpretation of the findings in connection with the existing literature. Finally, Section V offers conclusions and future perspectives regarding the topic under investigation.

Literature Review

Sustainable education is an approach to education that involves the integration of the three aspects of sustainability – environment, society, and economy – to ensure learners are equipped with the required knowledge and skills to help them make their contribution towards achieving a sustainable future (Makrakis & Kostoulas-Makrakis, 2023; Eilks, 2015). In the case of developing countries, sustainable education is vital in ensuring the achievement of

solutions to the many problems faced by these nations, such as poverty, inequality, and environmental degradation (Kieu et al., 2016; Kopnina, 2020). The fundamental concepts of sustainable education include intergenerational equity, environmental responsibility, global citizenship, and critical thinking and problem-solving skills. Through the adoption of a sustainability-based approach to education, the students will be empowered to make wise decisions that help in making contributions towards sustainability at the local and global levels.

There are several models of curricula that exist to achieve sustainability in education in developing nations. Dambudzo, (2015) explores sustainable development education in Zimbabwe and explains why it is crucial to modify the sustainability framework at the international level to the context of the country. Similarly, Tien, (2018) suggests a model for sustainable development in universities of developing nations, explaining the significance of addressing the sustainability issues in the local and international settings within the higher education curriculum. Additionally, Savelyev a& McKenna, (2011) analyse new sustainability curricula in higher education institutions and explain the importance of using interdisciplinary approaches to sustainability in higher education. Moreover, Banga Chhokar, (2010) examines curriculum innovation in India, elaborating on how the sustainability framework can be incorporated into higher education curricula for promoting social responsibility and environmental awareness.

Some examples of success in other parts of the world have proven that sustainable education is still possible despite a shortage of resources when it comes to including this concept in the curriculum. Gregersen-Hermans, (2021) highlights the link between ESD and internationalisation and emphasizes that different cultural perspectives need to be included in order to solve global problems concerning sustainability. Another good case of applying sustainability education into curriculums, although a country with less resources, is Iceland as described by Jóhannesson et al., (2011). Fahey et al., (2016) investigate the improvement of climate change adaptation knowledge in developing countries, demonstrating how education projects may help increase adaptation skills among disadvantaged populations. Shohel & Howes, (2011) provide examples of sustainable education in Bangladesh, emphasizing the role of nonformal education in promoting sustainable development at the community level.

Even with the increased realisation of the significance of sustainable education, many obstacles exist that prevent its successful adoption within the developing world. Perhaps the first challenge that needs to be mentioned is the lack of adequate financial and infrastructural resources required to facilitate the integration of sustainable education within the educational process. This is even more pronounced in the majority of developing countries because there is not enough funding available in their educational systems, thus making it impossible to use novel approaches to increase sustainable education. Another considerable challenge that can impede sustainable education is the cultural barrier, especially when dealing with developing nations whose traditional educational practices do not encourage sustainability because of ignorance toward environmental conservation. In addition to that, there are also political barriers, like political instability, associated with the promotion of sustainable education.

Methodology

Research Design

This research will use a mixed methodology where both qualitative and quantitative approaches are integrated. Through mixed methodologies, a more in-depth analysis can be achieved as the data collected will include numbers and qualitative findings. Quantitative findings will aid in finding patterns within the data, whereas qualitative findings will offer an analysis of how hard or easy it is to incorporate sustainable education within the national curricula of developing countries. This will ensure that a holistic approach to the effectiveness of the proposed models of sustainable education is used.

Fig. 1 is a visual representation of the process through which sustainable education curricula are developed in developing countries. The diagram demonstrates the impact that inputs such as content and teacher training have on the curriculum design and implementation processes, resulting in both immediate and future consequences, such as environmental responsibility and the contribution towards the SDGs.

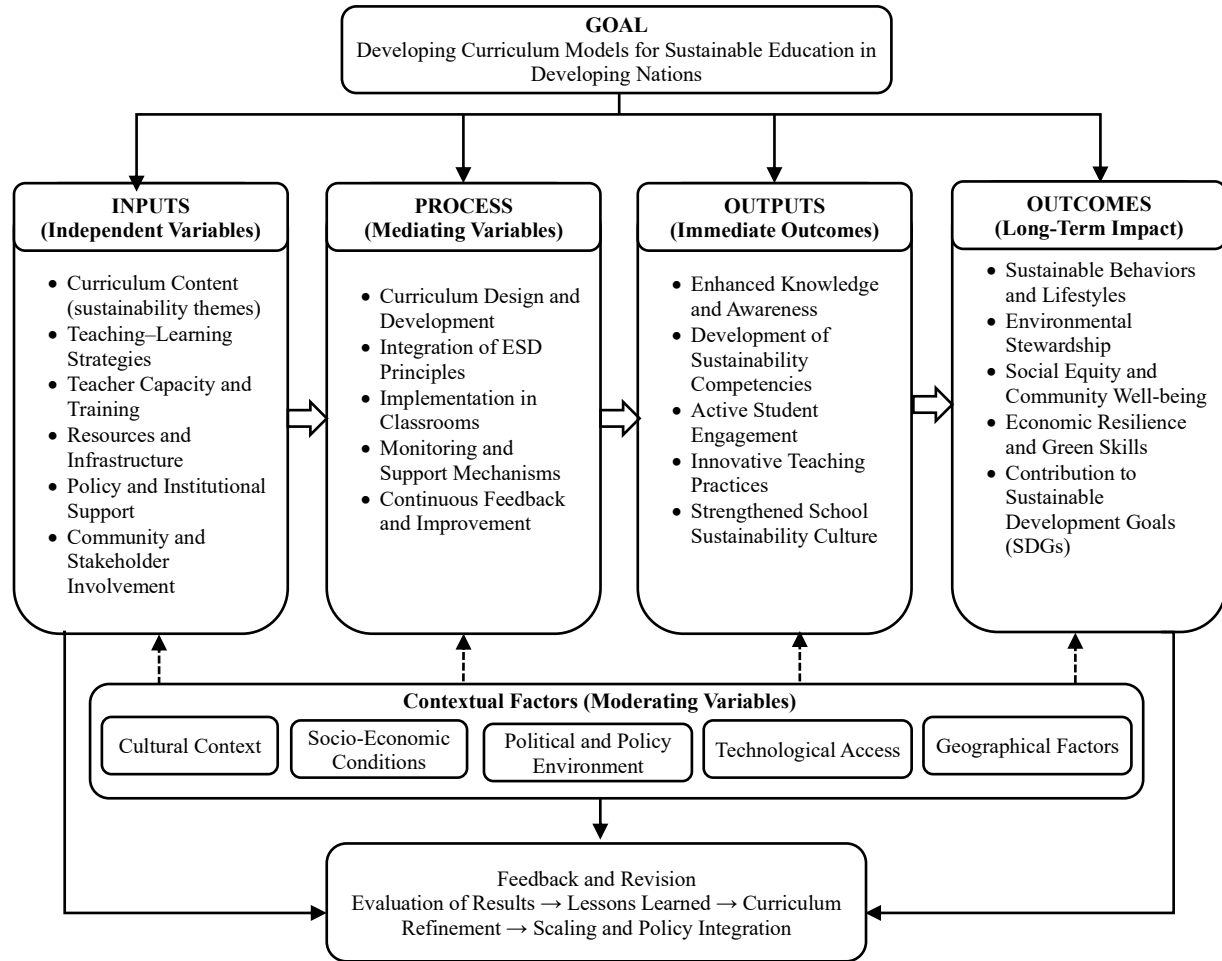


Fig. 1: Conceptual Framework for Sustainable Education Curriculum Development

Data Collection

The collection of information for this research will be undertaken using different techniques in order to obtain information from various angles regarding sustainable education in developing nations. The survey technique will be used to administer questionnaires to educators, students, and policymakers in order to obtain numerical data about their experiences, attitudes, and problems in relation to sustainable education. Interviews will also be done with key players such as the education administrators, curriculum planners, and policymakers in order to gather qualitative data that will provide more details regarding the problems related to sustainable education in relation to developing countries. The case study method will also be used through the selection of certain schools or places within the developing countries that adopt sustainable education within their curricula.

Sample and Population

The target population for this research study includes educators, students, and policymakers hailing from developing countries. The sample group will include educators at different educational levels, which can be primary, secondary, or tertiary level and who have experience in designing curricula or have taught courses related to sustainability. Furthermore, the sample will include policymakers who make decisions with respect to curriculum development and its implementation. Developing countries located in Africa, Asia, and Latin America will serve as the main geographical locations for the selection of the sample for this research project. In addition to that, emphasis will be laid on countries whose concern for sustainable development is notable, although there are certain problems with its implementation.

Analytical Techniques

Both quantitative and qualitative approaches will be used in the analysis of the data collected. Descriptive statistics, including mean, frequency, and standard deviation, will be used in analysing the quantitative data obtained from the surveys. In addition, inferential statistics such as the chi-square test or t-test may also be considered in identifying any correlations that may exist among the variables. Qualitative data will be analyzed through thematic analysis, whereby themes will be identified and used in the categorization of responses from the interviews and case studies. The identification of themes will require coding of data from the interview transcripts and case study reports. Such themes include barriers to sustainable development, the best practices and recommendations to enhance sustainable curriculum development in developing countries.

Results And Discussion

Findings

Insights drawn from the results show that there are quite a number of issues with the present curriculum model and the proposed sustainable education curriculum model for developing countries. According to the educators, the present curricula are outdated and do not provide enough education to promote sustainability. In addition, there is a great need for environmental education and social responsibility. Educators also found that there was difficulty in trying to integrate sustainability into the curricula due to a lack of adequate resources and knowledge to do so. However, the proposed curriculum model was received well since it involved interdisciplinary learning, community engagement, and learning through experience. There is a need for contextualization of sustainability education in relation to the issues facing the local communities.

Table 1: Comparison of Educators' Views on Current and Proposed Curriculum Models

Metric	Current Curriculum Model	Proposed Curriculum Model
Adequacy in Addressing Sustainability	45% Adequate, 55% Inadequate	85% Adequate, 15% Inadequate
Teacher Preparedness	40% Prepared, 60% Unprepared	70% Prepared, 30% Unprepared
Resource Availability	30% Adequate, 70% Inadequate	75% Adequate, 25% Inadequate
Student Engagement	50% Engaged, 50% Disengaged	80% Engaged, 20% Disengaged

Table 1 provides a comparison between the views of the educators on the effectiveness of the existing curriculum models and those of the proposed sustainable education curriculum models. The indicators used include adequacy in sustainability, teacher readiness, and resource availability.

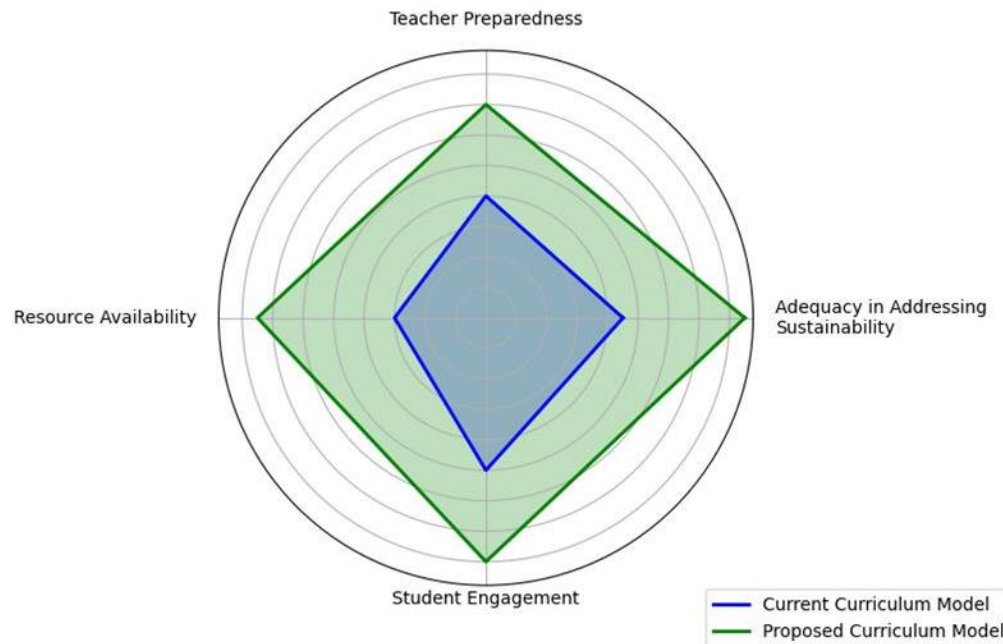


Fig. 2: Comparison of Key Metrics for Current vs. Proposed Curriculum Models

Fig. 2 illustrates the comparison between the existing curriculum model and the proposed curriculum model regarding the adequacy of the following aspects in terms of their impacts on sustainability, teacher readiness, resource availability, and student engagement. It is evident from the illustration that the proposed curriculum model demonstrates superiority in all metrics.

Interpretation

The results obtained generally coincide with the existing research conducted in regard to the problems associated with conventional curricula concerning sustainability education, presented by Dambudzo (2015) and Tien (2018), among others. The non-integration of sustainability within the core curriculum has been one of the recurrent issues in numerous countries, especially in developing ones. However, the endorsement of the above-mentioned models of curricula demonstrates a shift toward practical models that match today's global trends in sustainable development. It is vital that changes should be implemented in the curricula since both knowledge and certain skills would be required to cope with the present-day problems in sustainable development.

Policy Implications

To conclude, from the results highlighted above, the policymakers ought to aim at embedding sustainability concepts into national curriculums at all education levels. It is important to ensure that adequate funding is allocated towards developing skills among educators to enhance the provision of sustainability education. Additionally, the models for curriculum development ought to be tailored according to the characteristics of various regions. The policymakers also need to ensure that collaboration is fostered between government bodies, learning institutions, and the community to ensure that sustainability education is relevant. Funding for sustainability education, professional development for teachers, and an enabling policy environment are some of the major issues that will facilitate the adoption of proposed curriculum models.

Conclusion

Based on the findings, there are some shortcomings in the execution of sustainability in the curricula of the aforementioned countries. Teachers have discovered that the current curricula fail to cover the aspects of sustainability effectively since they do not have enough resources, adopt outdated methods of instruction, and provide insufficient training on sustainability-related topics. The proposed models of curriculum development that concentrated on interdisciplinary education, community involvement, and vocational training were positively perceived by the educators. It was noted that the models were more effective for engaging the learners and dealing with sustainability problems on local and global levels. Therefore, the research has confirmed the need for implementing a context-dependent curriculum framework, which would fit the peculiarities of the countries under discussion. In order to implement sustainability education, the policymakers and educators need to focus on including this topic into the curriculum frameworks of different levels of education. In order to achieve this goal, they can invest in the teacher training process, encourage interdisciplinary learning, and provide the learners with relevant materials for studying. It is important to mention that the models of the curricula should be flexible enough to include the cultural and socio-economic characteristics of the region. Research in this area should include longitudinal studies to help understand the effects of sustainable curriculum on the students' learning outcomes and community development. There should be additional research on how to evaluate the effectiveness of sustainability education within other cultures and different educational systems. Research on the potential benefits of using new technology to improve sustainability education can also provide valuable information. It is important for integrating sustainability into the education system in developing countries because of the numerous global issues such as climate change, inequality, and poverty that affect developing countries around the world. Sustainable education prepares the coming generation with the necessary skills and knowledge to build sustainable communities.

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